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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,109	12/14/2001	Jakob Nielsen	58683-00002USPX	2393

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Brian D. Walker, Esq.
Jenkins and Gilchrist, P.C.
3200 Fountain Place
1445 Ross Ave.
Dallas, TX 75202

EXAMINER

LAO, LUN S

ART UNIT	PAPER NUMBER
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2643

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DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,109

Applicant(s)

NIELSEN ET AL.

Examiner

Lun-See Lao

Art Unit

2643

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Introduction

1. Claims 1-43 of U.S. application 10/023,109 filed on 12/14/2001 are presented for examination.

Claim Objections

2. Claim 22 is objected to because of the following informalities: claim 22 recites “(e)” on line 11, which appears to be --- (c) ---. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 16-20, 42-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Chabries (US PAT. 5,029,217).

Consider claims 16, 43 Chabries teaches an apparatus for equalizing output signals from a plurality of signal paths, the apparatus comprising of:

(a) means for identifying a transfer function(see fig.5, (502,504)) for each of the signal paths;

(b) means for determining a filtering function (501,505) for each signal path such that a product of the transfer function and the filtering function is a selected function; and

(c) means (503) for applying the filtering function to the corresponding signal path, thereby correcting the transfer function of the signal path to the selected function to equalize (503) the output signals from the signal paths (see col.12 line 63-col.13 line 53).

As to claims 1 and 42, these are method claims of claims 16 and 43 and thus note the rejections of claims 16 and 43, respectively.

Consider claims 17-18, Chabries teaches an apparatus of the selected function is the transfer function (see fig.5, (502,504)) for one of the signal paths (see col.11 line 61-col.12 line 63); and an apparatus of the filtering function is determined such that a product of the transfer function and the filtering function is a common factor (see fig.5, (501,505) and col.11 line 61-col.12 line 63).

As to claims 2-3, these are method claims of claims 17-18 and thus note the rejections of claims 17-18, respectively.

Consider claims 19-20 Chabries teaches an apparatus the filtering function applying means comprises:

(a) a filter means (see fig.5, 501, 505) provided to the signal path; and
(b) means (503) for applying the filtering function to the filter means of its corresponding signal path, thereby equalizing (503) output signals from the filter

means of the signal paths (see col.12 line 63-col.13 line 53); and an apparatus of the transfer function identifying means comprises:

(a) means (see fig.3, 301) for providing a sample signal to the signal path to produce a sample output signal through the signal path; and

(b) means (301) for processing the sample signal and the sample output signal to identify the transfer function for its corresponding signal path (see col.6 line 18-57).

As to claims 4-5, these are method claims of claims 19-20 and thus note the rejections of claims 19-20, respectively.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-11, 15, 21-24, 26, 28-29, 31 and 33-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chabries (US PAT. 5,029,217) in view of Chabries (US PAT. 4,658,426).

Consider claim 21, Chabries(217) does not clearly teach an apparatus of the signal path comprises (a) a microphone for converting a sound signal to an electrical analog signal; and (b) an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal, wherein said transfer function identifying means comprises:

- (a) means for providing a noise sample to the microphone to produce a sample output signal through the signal path; and
- (b) means for processing the noise sample and the sample output signal to identify the transfer function of its corresponding signal path.

However, Chabries(426) teaches an apparatus of the signal path comprises (a) a microphone (see fig.9, 2) for converting a sound signal to an electrical analog signal; and (b) an analog-to-digital converter (4) coupled to the microphone (2) for converting the electrical analog signal into a digital signal, wherein said transfer function identifying means comprises:

- (a) means (10) for providing a noise sample to the microphone (2) to produce a sample output signal through the signal path; and
- (b) means (2) for processing the noise sample and the sample output signal to identify the transfer function (40,42) of its corresponding signal path (col.13 line 23-col.14 line 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Chabries (217) and Chabries (426)

to provide a device adapted to filter background noise from speech in real time so as to improve speech intelligibility.

As to claim 6, there is method claim of claim 21 and thus note the rejection of claim 21.

Consider claims 22-23, Chabries(426) teaches an apparatus according of the signal path comprises (a) a microphone for converting a sound signal to an electrical analog signal; and (b) an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal, wherein said transfer function identifying means comprises:

(a) means (speaker) for acoustically providing a noise sample to the microphone (see fig.1, 54,56) with a propagation time delay to produce a first output processed through the signal path;

(b) means (speaker) for providing a second output corresponding to the noise sample with the propagation time delay; and

(e) means (speaker) for processing the first output (54,56) and the second output (54,56) to identify the transfer function (adaptive filter, 52) of its corresponding signal path (see col.4 lines 13-62) and an apparatus of the noise sample providing means comprises:

(a) means (see fig.1, 54,56) for generating a first noise signal; and

(b) means inherently for converting the first digital noise signal into said noise sample (col.4 lines 15-62).

As to claims 7-8, these are method claims of claims 22-23 and thus note the rejections of claims 22-23, respectively.

Consider claim 24 Chabries (426) teaches an apparatus of a second output providing means comprises:

(a) means for generating a second digital noise signal (y), the second digital noise signal inherently being synchronized with said first digital noise signal and having properties corresponding to said first digital noise signal (x);

(b) means for delaying the second digital noise signal (y) by same amount of time as said propagation delay time; and

(c) means for compensating the conversion factor (weighted) of said first digital noise signal (x) into said noise sample (see col.2 line 30-col.3 line 56).

As to claim 9, there is method claim of claim 24 and thus note the rejection of claim 24, respectively.

Consider claims 26, 28 Chabries (426) teaches an apparatus of the converting means includes a digital-to-analog converter (see fig.9 8) and a loud speaker (10 and see col.13 line 24-54) and the transfer function (see fig.9, 40, 42) of the signal path is a transfer function of said microphone (2 and see col.13 line 24-54).

As to claim 10, there is method claim of claim 28 and thus note the rejection of claim 28.

Consider claims 29, 31 Chabries (426) teaches an apparatus the propagation

delay time is selected to be integer multiple of said first noise sample (see col.2 line 53-col.3 line56); and the said first and second digital noise signals (x,y) are a random noise signal (background noise and see col.2 line 30-col.3 line56).

As to claims 11 and 15, these are method claims of claims 29 and 31 and thus note the rejections of claims 29 and 31, respectively.

Consider claims 36-38 Chabries (426) teaches an apparatus is comprising a listening device; and hearing aid, and headset (earphone)(see col.13 lines 23-54).

As to claims 33-35, these are method claims of claims 36-38 and thus note the rejections of claims 36-38, respectively.

Consider claims 39-41 Chabries (217) teaches a hearing aid (a listening device and a headset) comprise a signal equalization (see fig.5, (503)) filter (see col.12 line 64-col.13line 6).

7. Claims 12-13, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chabries (US PAT. 5,029,217) as modified by Chabries (US PAT.4,658,426) as applied to claims 21, 22-23 above, and further in view of Schneider "a dual-channel MLS-based test system for hearing-aid characterization".

Consider claims 25 and 27 Chabries fails to teach an apparatus of the first digital noise signal providing means is a maximum length sequence generator; and the second digital noise providing means includes a maximum length sequence generator.

However, Schneider teaches an apparatus of the first (first channel) digital noise signal providing means is a maximum length sequence generator; and the second

(second channel) digital noise providing means includes a maximum length sequence generator (see pp 583-593).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Chabries into Schneider provide the hearing enhancement apparatus process signal faster.

As to claims 12-13, these are method claims of claims 25 and 27 and thus note the rejections of claims 25 and 27, respectively.

8. Claims 14 and 30, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chabries (US PAT. 5,029,217) as modified by Chabries (US PAT.4,658,426) as applied to claims 21, 22-24 above, and further in view of Fang (US PAT. 6,480,610).

Consider claims 30, Chabries fails to teach an apparatus of the first and second digital noise signals are a white noise signal.

However, Fang teaches an apparatus of the first (see fig.5, 588, pick up white noise from 586) and second (510 microphone picks up white noise from 586) digital noise signals are a white noise signal (see fig.5 583, (white noise generator)) (see col.7 line 25-col.8 line 29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Chabries into Fang provide the most suitable type of noise for training.

As to claim 14, there is method claim of claim 30 and thus note the rejection of claim 30.

Consider claim 32, Fang teaches an apparatus of the first (see fig.5, 588, pick up white noise from 586) and second (510 microphone picks up white noise from 586) digital noise signals are provided by a single source. (see fig.5 583, (white noise generator)) (see col.7 line 25-col.8 line 29).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Brennan (US PAT. 6,480,610) is cited to show other listening device.

10. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

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Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259)


DUC NGUYEN
PRIMARY EXAMINER